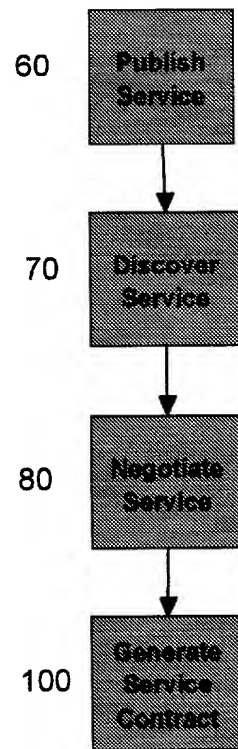


**Figure 1**

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**Figure 2**

|     |   |     |
|-----|---|-----|
| 120 | General Information   | 110 |
| 130 | Roles and Participants  |     |
| 140 | Delivery Channels   |     |
| 150 | Transport Protocol  |     |
| 160 | DocExchange Protocol  |     |
| 170 | Negotiation Protocol (Actions) <ul style="list-style-type: none"><li>- Bind_to_service</li><li>- Start_subnegotiation</li><li>- Commit_subnegotiation</li><li>- Counter_offer</li><li>.</li><li>.</li><li>.</li></ul> |     |
| 180 | Sequencing rules  |     |
| 190 | Policy constraints  |     |

Figure 3: Meta Contract

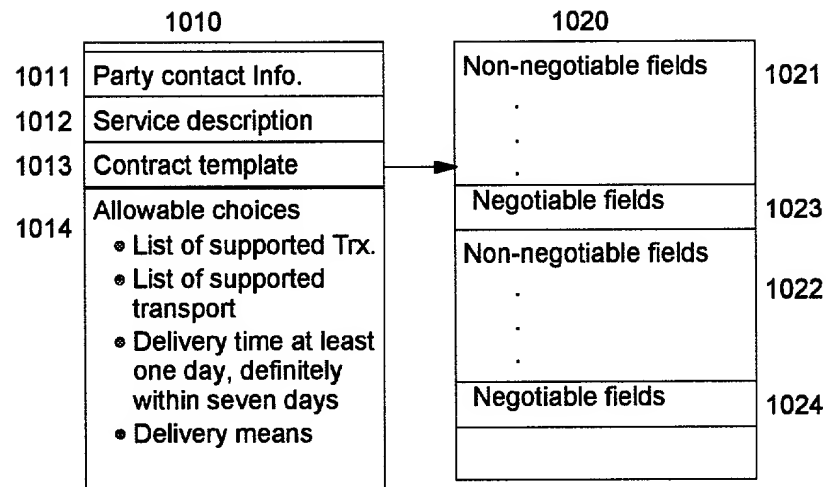
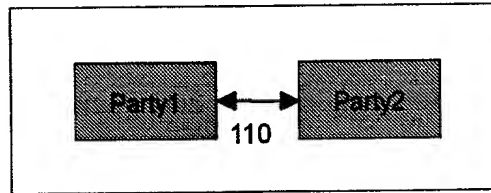
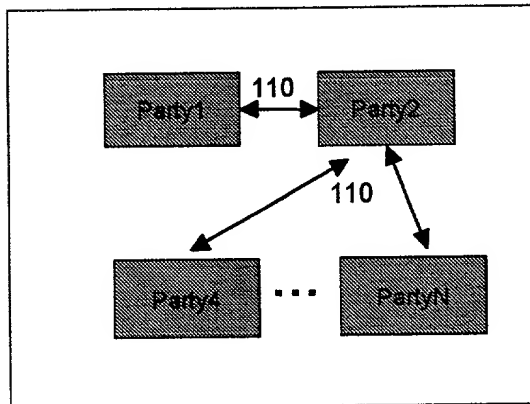


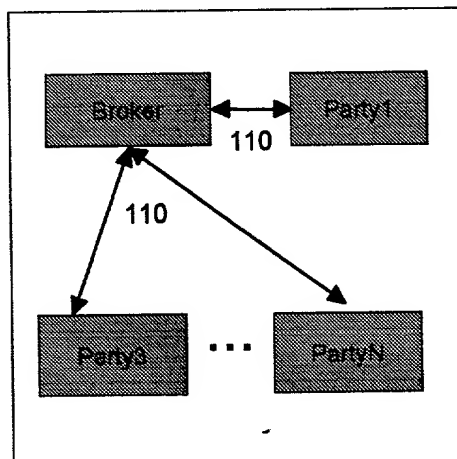
Figure 4. Party profile including Contract template



5A. Two parties direct negotiation



5B. Multi-parties direct negotiation



5C. Broker based negotiation

**Figure 5**

Downloaded from ascelibrary.org by Seattle University on 06/01/15

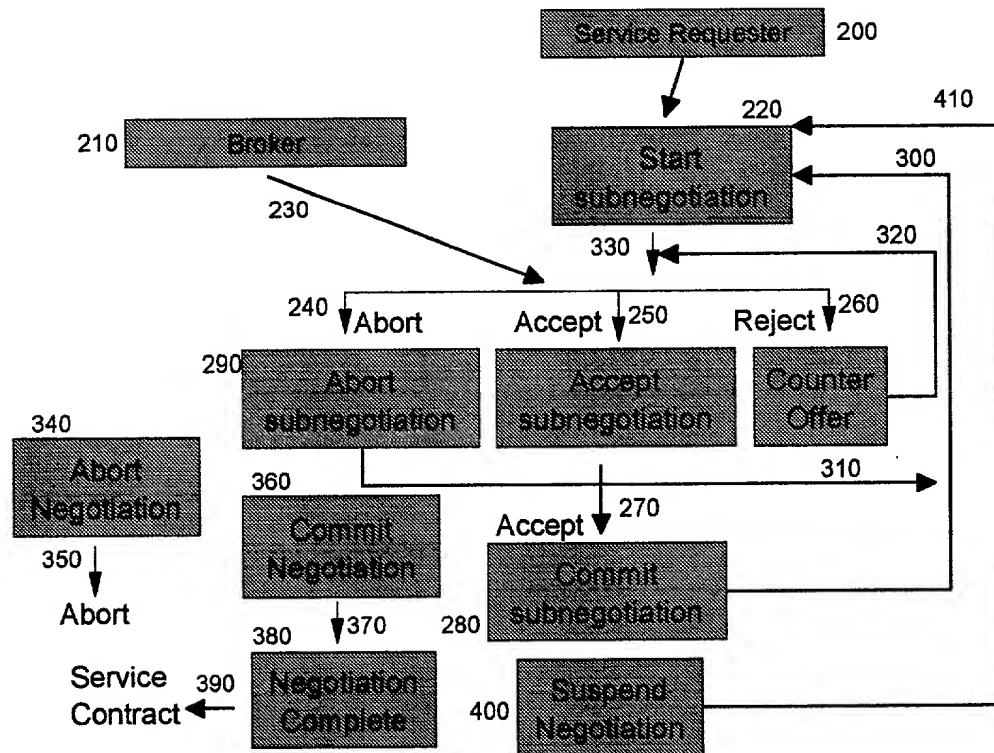


Figure 6

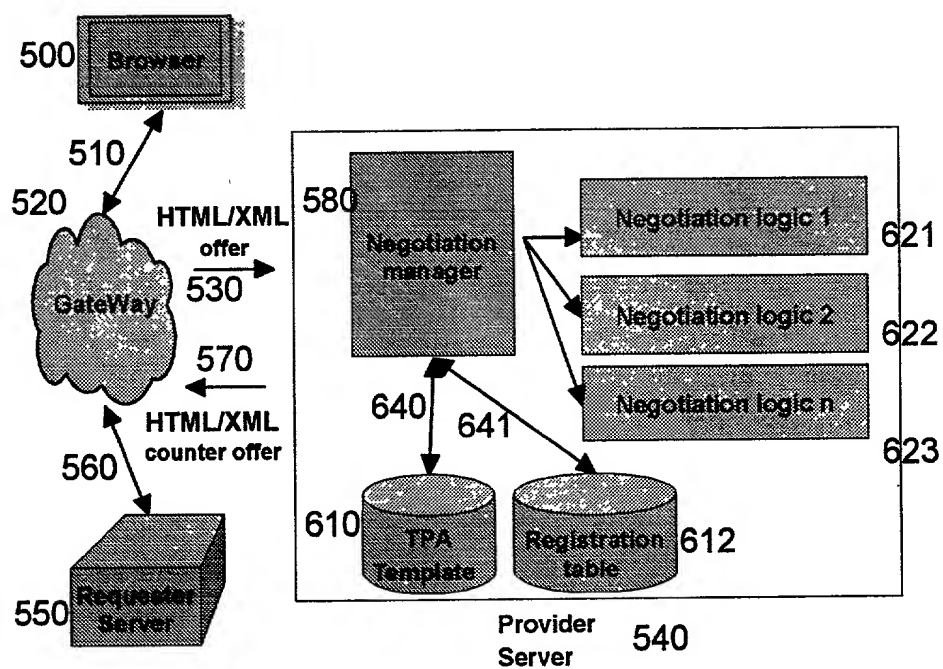


Figure 7

```

<!-- ***** -->
<!--      Offer DTD      -->
<!-- File name: Offer.dtd -->
<!-- ***** -->
<!ELEMENT Offer (Template, TPAINstance, Sender, NegotiationItem+)>
<!-- ***** -->
<!-- General information -->
<!-- ***** -->
<!ELEMENT Template (#PCDATA)>
<!-- ATTLIST Template TemplateId ID #REQUIRED -->
<!ELEMENT TPAINstance (#PCDATA)>
<!-- ATTLIST TPAINstance InstanceId ID #REQUIRED -->
<!ELEMENT Sender (#PCDATA) >
<!-- ATTLIST Sender
      PartyName CDATA #REQUIRED
      IDCodeType CDATA #REQUIRED -->
<!ELEMENT NegotiationItem (Name, Type, OfferValues)>
<!ELEMENT Name (#PCDATA)>
<!ELEMENT Type (#PCDATA)>
<!-- ATTLIST Type DataType (String|Integer|Date|ChoiceList|Duration|Range) -->
<!ELEMENT OfferValues (Value*[(StartDate, endDate)*] (MaxNum, MinNum)*)>
<!ELEMENT Value (#PCDATA) >
<!ELEMENT StartDate (#PCDATA)>
<!ELEMENT EndDate (#PCDATA)>
<!ELEMENT MaxNum (#PCDATA)>
<!ELEMENT MinNum (#PCDATA)>

```

Figure 8



```
<!-- ***** -->
<!--      CounterOffer DTD      -->
<!-- File name: CounterOffer.dtd      -->
<!-- ***** -->
<!ELEMENT CounterOffer (Template, TPAInstance, Sender, NegotiationItem+)>
<!-- ***** -->
<!-- General information      -->
<!-- ***** -->
<!ELEMENT Template (#PCDATA)>
<!ATTLIST Template TemplateId ID #REQUIRED>
<!ELEMENT TPAInstance (#PCDATA)>
<!ATTLIST TPAInstance InstanceId ID #REQUIRED>
<!ELEMENT Sender (#PCDATA) >
<!ATTLIST Sender
      PartyName CDATA #REQUIRED
      IDCodeType CDATA #REQUIRED>
<!ELEMENT NegotiationItem (Name, Accept, CounterOfferValues?)>
<!ELEMENT Name (#PCDATA)>
<!ELEMENT Accept (#PCDATA)>
<!ELEMENT CounterOfferValues(Value*[(StartDate, EndDate)*] (MaxNum, MinNum)*)>
<!ELEMENT Value (#PCDATA) >
<!ELEMENT StartDate (#PCDATA)>
<!ELEMENT EndDate (#PCDATA)>
<!ELEMENT MaxNum (#PCDATA)>
<!ELEMENT MinNum (#PCDATA)>
```

Figure 9